

DOCUMENT RESUME

ED 229 726

CS 007 092

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TITLE Job Literacy and Job Performance among Nurses at Varying Employment Levels.
PUB DATE Dec 82
NOTE 23p.; Paper presented at the Annual Meeting of the National Reading Conference (32nd, Clearwater Beach, FL, December 1-4, 1982).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Employment Experience; *Job Analysis; *Job Performance; Job Skills; *Nurses; Occupational Information; *Reading Research; *Reading Skills; Skill Analysis
IDENTIFIERS *Job Literacy

ABSTRACT

In a study designed to analyze differences between job performance and level of experience, 27 nurses from three different employment levels (in training, experienced, and supervisory) were observed, interviewed, tested, and rated for job performance. An observation checklist recorded job behavior in terms of the type of activity observed, the time spent in each activity, the purposes for which the activity was undertaken, the type of materials used in support of the activity, and the strategy or manner in which the materials were used. The structured interview consisted of five parts: a general cloze test, a job cloze test, an oral retelling anchored rating scale, seven open-ended questions dealing with literacy demands, and a few questions dealing with general demographic information. Results showed that the three groups were similar in their abilities to identify key ideas and complete cloze tests constructed from job material. Significant differences appeared, however, when nurses were asked to summarize material. In this case registered nurses (RNs) outperformed licensed practical nurses (LPNs), who outperformed student nurses. A similar pattern was found in cloze test data for an unfamiliar piece of general reading material. The job of the RN called for skimming and checking documents for treatment changes or to identify the need to order new medications. RNs did more skimming and checking than LPNs and student nurses. Job classification revealed 25% of the nurses to be superior, 56% as competent, and 19% as adequate. There were no significant differences among employment levels by job performance. Superior nurses had a clearer sense of what they were to be doing and actually used literacy to make themselves more effective. They wrote to communicate, they made notes to better organize themselves, and they read to gather information. There was little evidence of these behaviors in responses given by adequate nurses. (HOD)

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ED229726

JOB LITERACY AND JOB PERFORMANCE
AMONG NURSES
AT VARYING EMPLOYMENT LEVELS

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This Paper was Presented at the National Reading Conference
Clearwater Beach, Florida
December 1-4, 1982

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JOB LITERACY AND JOB PERFORMANCE AMONG NURSES AT VARYING EMPLOYMENT LEVELS

The relationship between literacy ability and general competence is a relation about which little is known. Assumptions about the relationship abound, however, and decisions are often made based upon undocumented assumptions. The Wall Street Journal (Hymowitz, 1981) reports workers being fired for lack of literacy abilities and industrial spokespersons claiming literacy-related mistakes as a major source of lost productivity.

Several questions remain unanswered about the relationship between reading and writing abilities and actual workplace performance. It is often assumed, but undocumented, that literacy requirements increase as one is promoted and moved to positions of higher responsibility. It is also often assumed, but undocumented, that superior workers usually have higher literacy abilities than other workers; that superior workers spend their time differently than other workers and approach literacy tasks differently.

This study examines these assumptions for a single occupation (Nursing) which is growing and calls for a substantial range of literacy abilities.

LITERACY ON THE JOB

A good deal of recent research has examined literacy in the workplace. This research includes work done in the military (Sticht, 1975; 1980; 1981), work examining wide ranges of occupations and

workplaces (Smith, 1975; Diehl and Mikulecky, 1980; Moe, Rush, and Storlie, 1979; Mikulecky, 1982), and research focusing on single occupations or workplaces (Heineman, 1979; Heath, 1980; and Jacobs, 1982). Major findings that run through these studies include:

- * Literacy is called for in most jobs;
- * Workplace literacy differs from school literacy in that workplaces call for a variety of materials while schools do not;
- * Literacy in the workplace is repetitive and usually for the purpose of accomplishing a task;
- * Workplace literacy is a social phenomenon which includes asking questions and gathering information from other workers;
- * Workers tend to read job material with higher levels of proficiency than they do general material;
- and * Training for a job usually is more demanding in terms of literacy than is performing the job.

LITERACY AND JOB PERFORMANCE

Research about the relationship of literacy to job performance is sketchy and based, to a large extent, upon information obtained from military studies. Kulp (1974) found, in a controlled study, that performance of an assembly task decreased significantly when worker reading skills were more than two grade levels below the difficulty level of instructions. Sticht, Caylor, Kern, and Fox (1971) found a strong relationship between reading skill and job performance when manuals were used voluntarily. The relationship was considerably less for men who rarely used manuals in performing tasks, regardless of reading ability levels. Kern (1980) found that use of print materials was much more likely among inexperienced workers performing tasks than among more experienced workers. Sticht (1975) in Reading for Working, reports correlations of reading ability to Job Sample performance that range for $r=.26$ to $r=.37$.

The correlation between basic literacy skills and job performance varies a great deal depending upon how job performance is measured. Miller, Nystrom and Hicks (1980) report some relationship between basic skills (reading, writing, listening, and mathematics) and job performance. Earlier work in this area is reported by Sticht (1975). These studies attempt to sort out the relationships between basic skills and 1) paper and pencil tests of job knowledge, 2) hands-on job performance, and 3) supervisor ratings. Reading test performance and paper and pencil job skill test performance correlate most highly ($r=.40$ to $r=.57$), reading scores correlated with hands-on performance scores less highly ($r=.26$ to $r=.40$), and reading scores correlated with supervisor rating of job performance the least highly ($r=.06$ to $r=.26$).

ASSESSING JOB PERFORMANCE

A well recognized problem in assessing job performance has been that most performance measurement rests on potentially fallible human judgment. Performance researchers over the last several decades have confronted the problem of developing clear conceptual and methodological guidelines in the construction of performance measures (Thorndike, 1949; Guion, 1961; James, 1973; and Smith, 1976). Performance scales anchored with validated behaviors have proven to be particularly useful in lowering error, increasing reliability, and being efficient in terms of job performance rating (Latham, Wexley, Pursell, 1975 and Borman, 1977).

Job performance scales anchored to behaviors have proven most effective when special care is taken in describing the job dimensions to be evaluated (Dickinson, 1977) and when the unambiguous anchor descriptions are developed with involvement from job incumbents and the

supervisors who are to participate in rating job performance (Smith and Kendall, 1967; Norton et. al., 1980). Such scales are almost always job specific and may vary within an occupation as one moves from workplace to workplace.

METHOD

This study involved observing, interviewing, testing, and rating for job performance 27 nurses from three different employment levels (i.e. in training, experienced, and supervisory). Data were analyzed for differences between job performance groups and level of experience groups.

Subjects:

The subjects of this study were 27 nurses who volunteered from the staff of a large metropolitan hospital. Nursing is an appropriate occupation for a study such as this because nursing is predicted to experience continued growth through the 1990's and is characterized by potential movement from training positions to higher positions with increased responsibility.

Of the 27 nurses, 10 were third semester student nurses (SPN's) enrolled in a Licensed Practical Nursing program at a local technical college, 10 were Licensed Practical Nurses (LPN's) employed on one of two medical/surgical floors of the hospital, and 7 were Registered Nurses (RN's) working as head nurses on these same medical/surgical floors. The LPN's ranged from less than a year to 20 years prior nursing experience while the RN's previous experience ranged from 6 years to more than 20 years. All subjects were women who participated voluntarily.

Procedures

Four research interviewer/observers (1 male and 3 females) took part in gathering data for this study. All were trained and gathered data when they had achieved a high degree of competence and inter-rater reliability. All subjects were observed on the job for a total of 8 hours spread over three work days. Student nurses were observed during their practicum sessions on the same medical/surgical floor as the employed nurses. Upon completion of the 8 hours observation, each subject completed a reading comprehension test (a CLOZE test) developed from a 9th grade level newspaper-like passage and a Job reading comprehension CLOZE test using a piece of reading material the subject had used on the job. Additionally, anchored rating scales were used to rate subject on ability to orally identify key ideas and summarize work materials.

Instruments: Observation Checklist

An observation checklist was developed over a series of months to enable research observers to accurately characterize each employee's or trainee's on-the-job behaviors in terms of A) the type or mode of activity observed, B) the time spent in each mode, C) the purposes for which the activity was undertaken, D) the type of materials used in support of the activity, and E) the strategy or manner in which the materials were used.

MODE OF ACTIVITY involved Reading, Writing, Doing, Listening, and Speaking. If a subject engaged in more than one of these during a minute, a Multi-modal category was used.

PURPOSES for activities included: To do, To learn, To assess, To reach agreement, To confirm the correctness of an action, To diagnose and To socialize or entertain. In addition, several combination categories were used (i.e. To do & learn) when the purpose obviously involved multiple purposes.

STRATEGIES used with literacy were recorded in one of 8 categories. These were: Read and do, Read and rehearse, Relate and associate, Skim for detail, Skim for an overview, Asking questions, Focus attention, and Other.

TIME SPENT in a particular activity or mode was recorded from two perspectives. An activity mode was coded for each observed minute (a total of 480 minutes or 8 hours) and secondly, the fraction of each minute that the subject was observed specifically reading or writing was noted separately. This provided overall accurate estimates of total reading and writing times as well as indications of reading and writing times that extended uninterrupted for longer than a minute.

Instrument: Structured Interview

A structured interview procedure was developed to allow observers to verify observations made during the 8 hour observation period and to add supplementary anecdotal information from subject points of view. The interview consisted of 5 parts: a General Cloze test, a Job Cloze test, an oral retelling anchored rating scale, 7 open-ended questions dealing with literacy demands and strategies, and a few questions dealing with general demographic information.

The General Cloze test was constructed from a 9th grade level

newspaper-like passage dealing with the environment. The Job Cloze test was constructed from material the subject had been reading on the job. Cloze test results were converted to Nelson-Denny Reading test grade level equivalents using a technique developed by Bormuth (1975).

The structured interview and observation checklist were developed and tested at the hospital for a period of several weeks. Observers conducted tandem interviews and observed the same subject (subjects not included in final data pool) for a period of 45 minutes. The data was then compared for each of the possible pairings of observers to determine the percentage of times raters agreed on responses and/or observations in each category. The actual data collection was begun after inter-rater reliability reached the 92% agreement level.

Instruments: Job Performance Scales

Job Performance was assessed by means of a multi-scale anchored rating of the subjects by their immediate supervisors and by the observers. In the weeks prior to job observations, nursing supervisors at the research site were contacted and shown samples of multi-scale anchored ratings. Structured interviews were then conducted to elicit from these supervisors key aspects of job performance and behavioral descriptions of superior, competent, and inadequate nurses. From these meetings and subsequent refinements, four 5-point anchored job performance scales were constructed to assess performance in Basic Knowledge, Ability to Diagnose a Problem, Inter-personal Skills, and Ability to Apply Basic Knowledge on the Job. A practice scale was constructed to allow the rater an opportunity to use the scales and ask questions prior to rating the job performance of each subject.

Supervisor and observer ratings were summed to construct an overall job performance rating.

Establishing acceptable inter-rater reliability for supervisor ratings has traditionally been a difficult problem. The correlation between job performance ratings of supervisors and research observers was $r=.58$, which is reasonably high for this sort of job performance rating.

Data Analysis

Data in this study are analyzed using a nonparametric analysis of variance test, the Kruskal-Wallis. Parametric analyses of variance assume normally distributed populations, an assumption that cannot be made about this study's population of volunteer nurses coming from three separate job categories (RN, LPN, and SPN). The Kruskal-Wallis test ranks all subjects in a single series. The rank sum is then computed for each group. From these, the Kruskal-Wallis H statistic is computed, which has approximately a chi-square distribution (Siegel, 1956).

Some interview data gathered for the study are qualitative data. The interview responses of SUPERIOR and ADEQUATE job performing nurses are analytically presented and discussed.

RESULTS AND DISCUSSION

Results will be discussed in terms of the two general working hypotheses:

1. There are significant differences among levels of nurse (Student Practical Nurse SPN, Licensed Practical Nurse LPN, and Registered Nurse RN) in terms of Literacy Abilities, Job Literacy Demands, and Literacy Strategies and Purposes employed on the job; and

2. There are significant differences among superior, competent, and adequate performing nurses in terms of how they handle job literacy demands.

Before discussing each hypothesis, a few general comments about the on the job observations and data need to be made. Certain data categories within each general area tended to predominate for nurses at all levels. For example, the mode area attempts to chart the number of full minutes nurses were involved with an activity (i.e. listening, reading, doing, and so forth). Over 90% of nurse activity was multi-modal. A typical nurse almost always changes activities one or more times during a sixty second period. There were 13 data categories to classify purposes for activities (i.e. learning, diagnosing, assessing, instructing, confirming, socializing, doing, and combinations of purposes). Doing (for example delivering therapy or preparing a medication) accounts for 78% of all purposes and doing in combination with other purposes brings the percentage to 90%. The heavy predominance of nurse behavior in a few specific categories and not in others occasionally made useful data analysis difficult.

Hypothesis 1: Differences by Training Levels

Kruskal-Wallis tests (See Table I) revealed a mixed picture in the area of nurse Literacy Abilities. Cloze tests assessing job reading ability showed SPNs (12.0 grade level), LPNs (12.0 grade level) and RNs (12.3 grade level) to all be averaging about the same ability levels with job materials. The range of abilities was from a low of 8th grade level for an LPN to a high of 15.8 grade level for an SPN. Anchored rating scales assessing nurses' abilities to identify key ideas and orally summarize them revealed some significant differences between

nursing groups with employed nurses tending to outperform student nurses.

Another statistically significant difference was found (See Table I) among groups' General Cloze test performance. SPNs averaged near the 10th grade level while employed nurses averaged near the 12th grade level. The range was from a low of 8.2 grade level for a SPN to a high of 13.5 for several nurses in other categories.

TABLE I
KRUSKAL-WALLIS ONE WAY ANALYSIS OF VARIANCE
NURSING LEVEL BY LITERACY ABILITIES

	(n=10) SPN		(n=10) LPN		(n=7) RN		SIG
	Rank	Mean	Rank	Mean	Rank	Mean	LEVEL
Job Cloze Gr. Level	12.1	12.0	14.7	12.0	15.6	12.3	NS
Identify Key Idea	11.7	4.2	14.0	4.6	17.2	4.9	NS
Summarize Key Idea	9.5	3.7	16.2	4.5	17.1	4.6	.04
Oral Retelling Total	9.5	7.9	15.3	9.1	18.5	9.5	.04
Gen.Cloze Gr. Level	7.4	10.3	16.1	11.8	17.6	11.9	.01

It appears that student nurses are similar to LPNs and RNs in their abilities to identify key ideas and complete Cloze tests constructed from job reading material. This can, in part, be attributed to familiarity with the repeatedly used job vocabulary and documents. Significant differences appeared, however, when nurses were asked to summarize material. In this case RNs outperformed LPNs who outperformed SPNs. A similar pattern was found in Cloze test data for the unfamiliar piece of general reading material. The SPNs, who have had less education than other groups, were less competent at higher level abilities such as summarizing and dealing with unfamiliar material, though they did well at simply recognizing key ideas and dealing with familiar material.

Literacy Demands were assessed in part in terms of time spent reading and writing on the job. Ranges for Job Reading Time were wide (varying from 30 minutes to 119 minutes per 8 hours) and averaging 68 minutes per 8 hours. Job Writing Time ranges were from 17 minutes to 88 minutes with a 45 minute average. Job Reading and Writing during a day averaged 113 minutes or nearly two hours. Kruskal-Wallis tests revealed no significant differences among nursing levels.

The types of materials and tasks encountered on the job revealed a great deal of similarity and some differences. For example, nurses at all levels have access to the same sources of print information. These include 1) the Cardex or daily worksheet of nursing care given to each patient, 2) patient charts which contain physicians' orders, graphs monitoring temperature and blood pressure, nursing notes summarizing the patient's observable condition, lab and procedure reports, medications sheet, and a brief physical history. Additionally, medical dictionaries and a Physician's Desk Reference of drugs, and Policy and Procedure manuals are found at each nursing station.

These materials were used in a variety of ways. In general, however, RNs would read information about patient conditions and provide oral summaries to LPNs and SPNs who often took notes on these summaries. The job of the RN calls for skimming and checking documents for treatment changes or to identify the need to order new medications. RNs do more skimming and checking than LPNs and SPNs, though not so much more as to be statistically significant. LPNs relied a good deal on the patient notes they took from RN summaries at the beginning of each shift, but they tended to skim and check these in a fashion similar to the strategies RNs used on more lengthy material. LPNs would skim notes,

check to confirm conditions, add to notes, and use abbreviations to organize just as RNs did with the original patient descriptions. Some LPNs would use reference works and some would not. The same was true of RNs. SPNs tended to emulate LPNs with the exception that they needed to have all work checked by a supervisor and they did spend a bit more time reading new material. (Class assignments and textbook readings of SPNs were not included in this study since SPNs were only observed on the job.)

Some differences existed among nursing groups on the Literacy Strategies and Purposes variables. Kruskal-Wallis tests revealed significant differences ($p .001$) between groups with SPNs ranking higher on the variables of Literacy for the Purpose of Learning" (Ranks: SPN 21.0, LPN 9.1, and RN 11.0) and "Learning Occuring from Literacy while Actually Performing a Task"(Ranks: SPN 20.7, LPN 11.6, RN 8.0). As one might expect, students did more learning on the job than did experienced nurses. No significant differences were found among groups in other literacy strategies observed.

Hypothesis 2: Differences by Job Performance Groups

Supervisor and observer ratings of job performance, which correlated at $r=.58$, were summed to create an overall job performance rating. Approximately 25% of nurses were classified as SUPERIOR ($n=7$), 56% were classified as COMPETENT ($n=15$), and 19% were classified as ADEQUATE ($n=5$). Kruskal-Wallis test revealed no significant difference among employment levels (RN, LPN, and SPN) by job performance indicating that nurses from each employment level were present in each performance category. Kruskal-Wallis tests revealed no significant differences

among performance groups in terms of experience on the job or in terms of previous job experience. A trend was apparent in each category, however, with SUPERIOR job performers having more experience (See Table II).

TABLE II
KRUSKAL-WALLIS ANALYSIS OF VARIANCE
EXPERIENCE BY JOB PERFORMANCE CATEGORIES

	(n=7) SUPERIOR		(n=15) COMPETENT		(n=5) ADEQUATE		SIG
	Rank	Mean	Rank	Mean	Rank	Mean	LEVEL
Experience on this Job	18.6	2.9yrs	12.4	1.7yrs	12.5	1.6yrs	NS
Overall Nursing Experience	18.9	12yrs	11.7	5.0yrs	13.9	4.9yrs	NS

Analysis of quantitative observation for differences among performance groups revealed virtually no significant differences. The amount of time spent reading and writing on the job was nearly identical for all job performance groups. Though there was a trend for SUPERIOR performing nurses to score higher on the various reading ability measures, the differences were not great enough to be statistically significant. The ranges of ability in each group were wide. For example performance on the Job Cloze test for the COMPETENT group ranged from a low of 8.3 grade level to a high of 15.8 grade level. Of the various purposes and strategies used on the job, only "Reading to Assess while Performing a Task" revealed a significant difference ($p .05$) among performance groups with SUPERIOR nurses rating higher than COMPETENT nurses who rated higher than ADEQUATE nurses.

During post observation interviews, nurses had been asked to

discuss their most complex literacy tasks and the methods they employed to become more efficient and effective with the literacy tasks they faced on the job. Responses of the SUPERIOR and ADEQUATE rated nurses to these two questions were compiled. Analysis of these responses revealed some differences between the two groups not revealed by the quantitative analyses.

For example, when SUPERIOR rated nurses were asked to describe the "most difficult or complicated ways they used literacy on the job," they made comments of the following sort:

#21 RN I find reading unfamiliar procedures the most complicated. I usually think about what I am going to do and why I am going to do it. Then I read and review the doctor's orders and the procedures.

#13 LPN When I have to check out medication that is not in the drawer or is in the drawer without an order, I must go through entire chart and read the past profile to see if they've been on it or not. Then I must go to the pharmacy to settle it with them.

#19 LPN I find it hard to decipher and follow doctor's orders. If I think about what he is writing about, it helps. If it is still unclear I call him to clarify the orders or or find someone familiar with the case.

#20 LPN after reading the lab work and finding serious things wrong, I must relate that information to the patient (explaining malignancies). I have to read the doctor's order to learn what the patient has.

#04 SPN Writing the description of drainage or suction and trying to find correct words that would tell others exactly how it smelled, looked, etc. is hard. When I write a description I try to compare it to something that others can identify with (size, color, consistency, amount, ect.).

Throughout these comments there is a sense of SUPERIOR nurses using literacy to solve problems. Many nurses describe reading and then taking the time to think through what is called for (See RN #21). These nurses are aware that descriptions need to be accurate and must communicate (See SPN #04). The SUPERIOR nurses have clear purposes for

what they are doing.

The same question about complicated literacy tasks brought different sorts of responses from nurses rated as ADEQUATE. For example, one of the five could think of no complicated literacy task, even when she was prompted. Two of the five mentioned deciphering the doctors' notes and mentioned asking others for help to resolve the difficulties. One nurse mentioned that reading procedures was sometimes difficult and the last nurse mentioned the need to carefully read orders to spot mistakes.

These sort of comments seem to reflect a superficial understanding of how literacy can be used to more effectively perform one's job. Members of the ADEQUATE group do not seem to be aware of how to apply literacy to problem solving and indeed sometimes may not even be aware of the existence of either problems or complex uses of literacy. This is especially clear when contrasting their responses to those of SUPERIOR rated nurses.

The same contrast is apparent in responses to a question asking for techniques employed to be more efficient or effective with job reading and writing. SUPERIOR nurses made comments such as those listed below:

#21 RN I use abbreviations and symbols and color code the worksheet. . . I talk to myself to better associate names and diagnoses. I try to do things as systematically as I can so that I can pick up where I left off when interrupted.

#22 RN Use abbreviations. I also pencil mark things on the worksheet. Some things to be erased, red to draw attention, and black for general. I sometimes rely on memory unless there is a doubt. I use the worksheet; it saves time and steps.

#24 RN Abbreviations and I make notes to myself (especially in the report). When writing I use red ink for pertinent information and black ink for general information. I check and recheck red ink notes. I watch

and check the steps I'm to take. I try to be organized as much as possible.

#13 LPN I use worksheet columns. I also use abbreviations and symbols as much as possible (i.e. arrows to indicate if the patient needs to be down for bed rest or up). I use different colors for different information: black for general care, red for specialty things or specific rooms, and a green marker to show that medication has stopped.

#20 LPN I take notes on specifics (pain shots, time, where shot is given). I use the PDR to look up medication descriptions. If unsure, I always recheck the Dr.'s orders.

#19 LPN I use abbreviations, both the hospital's and my own. I try to make notes of everything that transpires. I use these as a handy reference. I also make notes to the doctor on things to be ordered and done. I use black ink for general info and red ink for pertinent information. and finding serious things wrong, I must relate that information to the patient (explaining malignancies). I have read the doctor's order to learn what the patient has.

#04 SPN I use abbreviations and try to add more accurate detail on patient descriptions. I try to talk to the patient and observe the patient when the patient first gets up to get more accurate readings. I read other nurses notes to see how they wrote up similar symptoms.

These comments reflect a good deal of conscious mental activity associated with the literacy used on the job. Abbreviations and color coding to aid memory are almost universal. Some SUPERIOR nurses take extensive notes. Nurse #21 consciously tries to anchor important names and diagnoses by talking to herself while several other nurses set up extensive marking and record keeping systems to organize and make themselves more effective. The SPN who is part of this group is especially aware of the need for descriptions to communicate to nurses on the next shift. She reads the notes of other nurses to perfect her expression and descriptions. Each nurse organizes literacy to best serve the needs of the job.

A different pattern is present among nurses rated as merely ADEQUATE. These nurses don't think of efficiency in terms of doing a more effective job but rather in terms of simplifying what is required

of them. For example, nurse #08 SPN responds to the question about how she makes herself more efficient by saying "I use abbreviations and code words-- you know, one word that covers many symptoms." Her job may be made simpler but at the expense of loss of accurate information.

Contrast her to SPN #04 who works to make sure her descriptions are as accurate as possible. Other ADEQUATE nurses seem to miss the whole point of how to be more efficient with print and instead rely on memory in a way eschewed by SUPERIOR performers. Examples of this are found in the comments of nurses #12 and #05:

#12 LPN I have a good memory and depend on that a lot. I try to keep my mouth closed and not lose my temper so much.

#05 SPN I read more to refresh the diagnosis. I memorize in terms of remembering a patient who sticks in your mind.

An RN could have a good many ways to become more efficient as evidenced by comments made by the SUPERIOR group. The RN rated as ADEQUATE, however, had only a single comment: #26 RN "I sometimes write notes containing a list of things to do." One nurse among those rated as ADEQUATE seems to know what is expected. She mentions using abbreviations and looking at charts, but quickly lapses into ways to make her own job more simple "I do the linens and make the beds all at once. I do the charting as soon as possible."

The major differences between SUPERIOR and ADEQUATE NURSES did not reveal themselves in most of the observational variables or even the simple Cloze reading tests. There was a slight tendency for SUPERIOR nurses to score a bit more competently on reading tests and to spend a bit more time "Reading to Assess". The most revealing differences between SUPERIOR and ADEQUATE nurses, however, were revealed by "how" they used literacy. SUPERIOR nurses had a clearer sense of what they

were to be doing and actually used literacy to make themselves more effective. They wrote to communicate, they made notes to better organize themselves, and they read to gather information and to cross check inconsistencies. There was little evidence of any of these behaviors in interview responses given by ADEQUATE nurses. It is difficult to easily characterize the literacy activities of SUPERIOR nurses, but literacy for problem-solving as well as critical thinking and reading come to mind. The difference between nursing groups was not so much in what they had available as it was in how they used it.

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